

**Confidential Attorney Work Product**  
**Draft – Do Not Produce**

## **Status Report, April 9, 2005 – Illinois River Watershed Studies**

### **Introduction**

This document discusses the status of work approved as of April 9, 2005.

### **Status of Phase 1 Work Tasks 2.1 – 2.12**

CDM and Lithochimeia have completed the following tasks:

- Task 2.2, Mapping
- Task 2.3, Aerial Survey
- Task 2.4, Identification of Recon Locations
- Task 2.5, Field Recon of Potential Sampling Sites
- Task 2.6, Selection of Sediment Sampling Locations
- Task 2.7, Sampling and Analyses of Sediment Samples
- Task 2.13, Lake Sampling

Analytical results for the sediment samples (tasks 2.7 and 2.13) collected from the streams and lakes have been received from the laboratories (lake results received on April 6). The Evaluation of Sediment Chemistry (task 2.8) has started and selected data from the streams has been posted on the map of the watershed. Figures showing concentrations ranges by colored "dots" will be distributed in the next few days.

Task 2.11, Aerial Photography, photography is complete and processing is currently being finalized. The actual photos should be available around April 15. Task 2.1, Data Review, and Task 2.12, Work Plans/Meetings, are on going. Task 2.9, Evaluation of Sediment Thickness in TenKiller, will be completed at the end of April in conjunction with Phase 2 tasks. Task 2.10, Evaluation of Source Material, has been replaced by Task 3.6, Soil and Litter/Manure Sampling.

### **Status of Phase 2 Work Tasks 3.1 – 3.5**

A summary of these tasks follow:

- Task 3-1, Source Characterization. This task has been replaced by new Task 3.6, Soil and Litter/Manure Sampling (see below).
- Task 3-2, Reference Characterization. This task includes habitat characterization; benthic, fish and periphyton sampling; sediment toxicity testing; and sediment and water sampling and analyses. A new potential reference stream was identified, Cedar Hollow. This stream has been inspected and samples collected for analyses. Oklahoma scientific collecting permit was obtained, and the Arkansas collecting permit application has been submitted to the state.
- Task 3-3, River Characterization. This task includes habitat characterization; benthic, fish and periphyton sampling; sediment toxicity testing; and sediment and water sampling and analyses. Eight locations in the Illinois River watershed will be selected for sampling. Staff from CDM visited potential locations with Dr. Conrad Kleinholz on April 4 and 5. Opportunistic samples were collected of sediments, litter and runoff.
- Task 3-4, Reservoir Characterization. This characterization will be performed at three locations in Tenkiller Ferry Lake. This task includes benthic and zooplankton/phytoplankton sampling; sediment toxicity testing; sediment and water sampling and analyses; and sediment core age dating. Dr. Eugene Welch of the University of Washington has been contacted for expert advice concerning sampling and analyses.
- Task 3-5, Technical Memorandum. This task includes data reporting.

**Confidential Attorney Work Product**  
**Draft – Do Not Produce**

## **Status of New Phase 2 WorkTasks 3.6 – 3.12**

These tasks include:

- Task 3.6, Soil and Litter/Manure Sampling
- Task 3.7, High Flow Stream Sampling
- Task 3.8, Edge of Field Sampling
- Task 3.9, Bacteria Analyses by PCR
- Task 3.10, Spring and Seep Sampling
- Task 3.11, Air Sampling (on hold)
- Task 3.12, Evaluation of EDCs in Fish

### **Task 3.6, Soil and Litter/Manure Sampling**

This work includes sampling soils in fields, control areas and litter in poultry houses. The work plan was sent to Dan Parrish, Director of Oklahoma Department of Agriculture, Food, and Forestry, Agricultural Environmental Management Services, on April 8, 2005. We anticipate a conference call early the week of April 11 to schedule training and sampling.

### **Task 3.7, High Flow Stream Sampling**

CDM with support of Lithochimeia will sample lower order streams (smaller basins) at 12 locations. Samples will be collected at each location during four high flow and one normal flow events. All equipment has been ordered and shipped to Lithochimeia in Tulsa. Installation of the automatic sampling stations at each of the locations will start on Monday April 11. Installation should be complete in approximately ten days.

### **Task 3.8, Edge of Field Sampling**

To document actual release of contamination from fields on which litter has been applied, samples of the runoff during and after rainfall events will be sampled. To locate appropriate fields, public assess locations near fields (ditches, etc) will be surveyed using a portable XRF (x-ray fluorescence) instrument. This instrument can quantify metal concentrations in soil very rapidly and is an EPA approved method. Based on this survey of many locations, we will select potential locations (high soil concentrations) to collect water samples during or immediately after runoff events. The selection of these locations will be coordinated with separate efforts to identify and verify field application of litter. We anticipate surveying 80 to 100 locations and selecting 20 locations for collection of soils and runoff (water). This task will start the Week of April 24.

### **Task 3.9, Bacteria Analyses by PCR**

As previously discussed, PCR analyses are anticipated to provide a definitive identification and quantification of bacteria associated with chicken litter. However, the appropriate and exact genetic DNA sequences to evaluate must first be determined. This will be performed on five samples of chicken litter collected during task 3.6. After the appropriate and unique genetic materials are identified, the PCR method will be validated on actual soil and water samples.

Dr. Valerie (Jody) Harwood of the University of Southern Florida has agreed to assist as an expert. She has been sent the scope of work and related articles. The scope of work will be discussed with Dr. Harwood early the week of April 11. In addition, she will assist in identify appropriate literature to review before any laboratory work is started.

### **Task 3.10, Spring and Seep Sampling**

Over 50 springs have been identified in the Illinois River watershed. These springs are a result of groundwater flow and may be impacted by litter. Twenty springs will be sampled and analyzed. The results will provide a preliminary indication of groundwater contamination in the watershed.

**Confidential Attorney Work Product**  
**Draft – Do Not Produce**

A date for sampling of the springs and seeps has not been selected but will probably occur during the last week of April or first week of May.

### **Task 3.12, Evaluation of EDCs in Fish**

The purpose of this study is to determine if EDCs are causing endocrine disruption in fish found in the Illinois River and Tenkiller Ferry Lake. The sexual development in fish can be altered if exposed to EDCs. Male fish exposed to estrogens can become feminized, produce egg proteins, and have smaller reproductive tissues. Largemouth bass (*Micropterus salmoides*) and common carp (*Cyprinus carpio*) will be collected and analyzed for plasma vitellogenin (VTG); estrogen metabolites; sex histological of gonadal tissue, ovaries, and liver; gonadosomatic index; and hepatosomatic index.

Dr. Peter Thomas of the University of Texas-Austin has agreed to assist in this task as an expert. He has received the scope of work and preliminary conversations have been conducted. He will formally make some recommendations during the week of April 11.

### **Additional Tasks**

USGS Sampling and Analyses: Lithochimeia and CDM have been working with the USGS (through Kelly Burch and Bill Cauthron) to coordinate sampling of higher order (larger) streams during high flow. Bill Cauthron and USGS personnel were sent an expanded work plan on April 1, 2005. Follow up discussion concerning coordination are planned during the week of April 11.

Owner and Land Application Site Identification: \_\_\_\_\_

Stratus Damage Evaluations: \_\_\_\_\_

HydroQual Modeling: \_\_\_\_\_